

**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY EXAMINATION REPORT**  
(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 11521PC2-PD	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).	
International Application No. <b>PCT/AU2003/001520</b>	International Filing Date (day/month/year) 13 November 2003	Priority Date (day/month/year) 13 November 2002
International Patent Classification (IPC) or national classification and IPC Int. Cl. <sup>7</sup> C04B 14/00, 26/02, 26/14, 26/16, 26/18; C08K 3/00		
Applicant THE UNIVERSITY OF SOUTHERN QUEENSLAND et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 1 sheet(s).

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 4 June 2004	Date of completion of the report 21 September 2004
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer  <b>JAMES DZIEDZIC</b> Telephone No. (02) 6283 2495

**I. Basis of the report****1. With regard to the elements of the international application:\***

- ☐ the international application as originally filed.
- ☒ the description, pages 1-10, as originally filed,  
pages , filed with the demand,  
pages , received on with the letter of
- ☒ the claims, pages 12-14, as originally filed,  
pages , as amended (together with any statement) under Article 19,  
pages , filed with the demand,  
pages 11, received on 25 August 2004 with the letter of 25 August 2004
- ☒ the drawings, pages 1/4 - 4/4, as originally filed,  
pages , filed with the demand,  
pages , received on with the letter of
- ☐ the sequence listing part of the description:  
pages , as originally filed  
pages , filed with the demand  
pages , received on with the letter of

**2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.**

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

**3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:**

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

**4. ☐ The amendments have resulted in the cancellation of:**

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.

**5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\***

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims 1-32	YES
	Claims	NO
Inventive step (IS)	Claims 1-32	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-32	YES
	Claims	NO

**2. Citations and explanations (Rule 70.7)**Citations

- D1. US 6057389 A  
D2. Derwent Abstract Accession No 37608A/21, (JP 53-041364 A)  
D3. JP 11-327564 A

Novelty (N) and Inventive Step (IS)

The Claims 1-32 are considered novel and inventive in light of the prior art documents D1, D2 & D3.

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## CLAIMS

1. A polymer concrete formulation comprising:  
an amount of polymer resin;  
an amount of a light aggregate with a specific gravity less than  
5 that of the resin;  
an amount of a heavy aggregate with a specific gravity larger  
than that of the resin; and  
an amount of thixotrope to allow the light aggregate to be  
uniformly distributed throughout the resin.
- 10 2. The polymer concrete formulation of claim 1 wherein the  
polymer resin is any suitable polyester, vinylester, epoxy or polyurethane  
resin or combination of resins.
3. The polymer concrete formulation of claim 1 wherein the  
polymer resin content is between 25-30% by volume.
- 15 4. The polymer concrete formulation of claim 1 wherein light  
aggregate has a specific gravity of 0.5 to 0.9.
5. The polymer concrete formulation of claim 1 wherein the light  
aggregates usually make up 20-25% by volume of the polymer concrete.
6. The polymer concrete formulation of claim 1 wherein the light  
20 aggregates are centre spheres.
7. The polymer concrete formulation of claim 6 wherein the centre  
spheres has a specific gravity of approximately 0.7.
8. The polymer concrete of claim 1 wherein the light aggregate is  
hollow glass microspheres.
- 25 9. The polymer concrete of claim 1 wherein the heavy aggregate  
makes up 40-60% by volume of the polymer concrete.
10. The polymer concrete of claim 1 wherein the heavy aggregate  
is basalt.
11. The polymer concrete of claim 10 wherein the basalt is  
30 crushed.
12. The polymer concrete of claim 10 wherein the basalt has a  
particle size between 5 to 7 mm.
13. The polymer concrete of claim 10 where the basalt makes up